

REMARKS

Claims 1-7, 9-16 and 18 are pending in this application. By this Amendment, claims 8 and 17 are canceled without prejudice to, or disclaimer of, the subject matter recited therein. No new matter is added. Reconsideration and prompt allowance of the application is respectfully requested.

Claims 1-7, 9-16 and 18 are pending in this application and have been rejected.

Reexamination is respectfully requested in light of the following remarks. There are no amendments to the claims or specification.

I. Rejections - 35 U.S.C. §102

Claim 1 has been rejected under 35 U.S.C. §102 as being unpatentable over Shakuda. Applicant respectfully traverses this rejection and the rejection of all claims dependent from claim 1, which are rejected on the basis of Shakuda.

Shakuda fails to anticipate claim 1 for two reasons. First, claim 1 recites that the transparent thick-film semiconductor layer has the side face portion to configured as chemically etched surfaces. There are no chemically etched surfaces disclosed in Shakuda. For this reason alone, the rejection under 35 U.S.C. §102 must be withdrawn.

Next, Applicants' claim 1 requires a concentration of 5×10^{16} to 2×10^{18} . On the other hand, Shakuda discloses only a broader range, which is 1×10^{16} to 1×10^{19} . Applicants' range falls within the Shakuda range, and is not anticipated. MPEP §2131.03(II) states that it may be reasonable to conclude that a narrow range is not disclosed with sufficient specificity to constitute anticipation of the claims. The Examiner should refer to *Atofina v. Great Lakes Chem. Corp*, 441 F.3d 991, 999, 78 USPQ2d 1417, 1423 (Fed. Cir. 2006), which holds that a narrow range is a species of a broader range. In *Atofina*, the court reasoned that the broad range of the reference is a generic disclosure of the range and that the narrower range of the claim is a species. The court then noted that "[i]t is well established that the disclosure of a

genus in the prior art is not necessarily a disclosure of every species that is a member of that genus," citing *In re Baird*, 16 F3d 380, 382, 29 USPQ2d 1550 (Fed. Cir. 1994). The question is whether the species encompassed within the genus is disclosed. The rejection does not address how the genus and species are disclosed.

In Applicants' claim 1, the two limitations not present in Shakuda also operate and work together to comprise Applicants' invention. Most specifically, the difference is found in the relationship between the upward limitation (2×10^{18}) and the chemical etch process, which yields the product of a chemically etched surface. The Examiner's attention is respectfully directed to Fig. 5 of Applicants' specification, which clearly explains the relationship. Fig. 5 at the top shows the side surfaces prior to etching of the light-emitting device. On the left hand side of the bottom portion of the figure there is shown a device 90, which has a dopant 90, which is not more than 2×10^{18} . This is shown as being completely shaded with all damaged areas removed. On the other hand, the right hand side of the bottom portion of Fig. 5 shows a case where the dopant exceeds 2×10^{18} . In this case, the etching process does not remove all of the damaged area and a portion 90d' remains to reduce luminance. This shows that the limitation of 2×10^{18} in Applicants claims is a critical limitation and defines over Shakuda in precisely the same manner as found by the court in *Atofina*. The species is unique

The lower range limit 5×10^{16} is also critical to the claimed species of the range disclosed in Shakuda. Most specifically, Applicants teach at the bottom of page 8 and top of page 9 that if the dopant concentration is less than 5×10^{16} , sheet resistance is inevitably increased, which results in an inefficient current spreading when the light-emitting portion is supplied with current. There is no teaching, or any disclosure in Shakuda that would suggest this lower-range limitation.

Since both the upper and lower range limitations are critical, and neither is disclosed in Shakuda, Applicants claims are clearly allowable.

Claim 1 is therefore clearly not anticipated because of the relationship between the dopant and the etching, which is not disclosed at all in Shakuda.

II. Claim Rejections - 35 U.S.C. §103

Claim 2 has been rejected under 35 U.S.C. §103 as being unpatentable over Shakuda in view of Hung. This rejection is respectfully traversed because Shakuda does not teach the chemically etched surface or the claimed range.

Claim 11 has been rejected under 35 U.S.C. §103 as being unpatentable over Shakuda in view of Kuhn-Kuhnenfeld '014. The Examiner reasons that it would be obvious to etch a GAP process-damaged layer with an aqueous solution. However, Applicants' etching of the surface is for the purpose of improving the light emission. The Examiner on the other hand argues that the motivation would have been to smooth the process damage layer for further processing. However, there is no further processing of the LED device as claimed, or as disclosed in any of the references. Applicant recognized the problem of reduced luminance due to the dopant and solved it by providing the chemically etched surface (Fig. 5). There is no suggestion, teaching or much less a motivation to combine the two references. Most specifically, there is no recognition that etching has any effect on light emissivity, which is due to a damaged layer.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-7, 9-16 and 18 are earnestly solicited.

The Examiner is invited to contact the undersigned at the telephone number set forth below if there are any further questions.

Respectfully submitted,



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